

U.S. Patent

May 23, 1995

Sheet 1 of 2

5,417,129

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FIG. 1

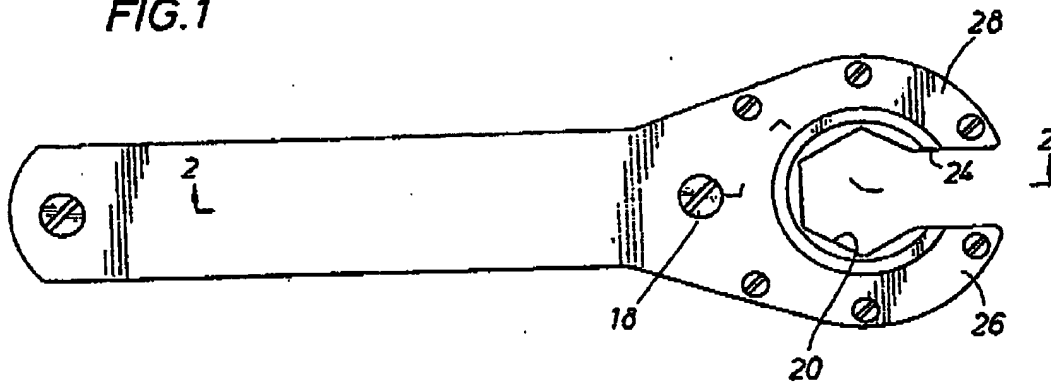
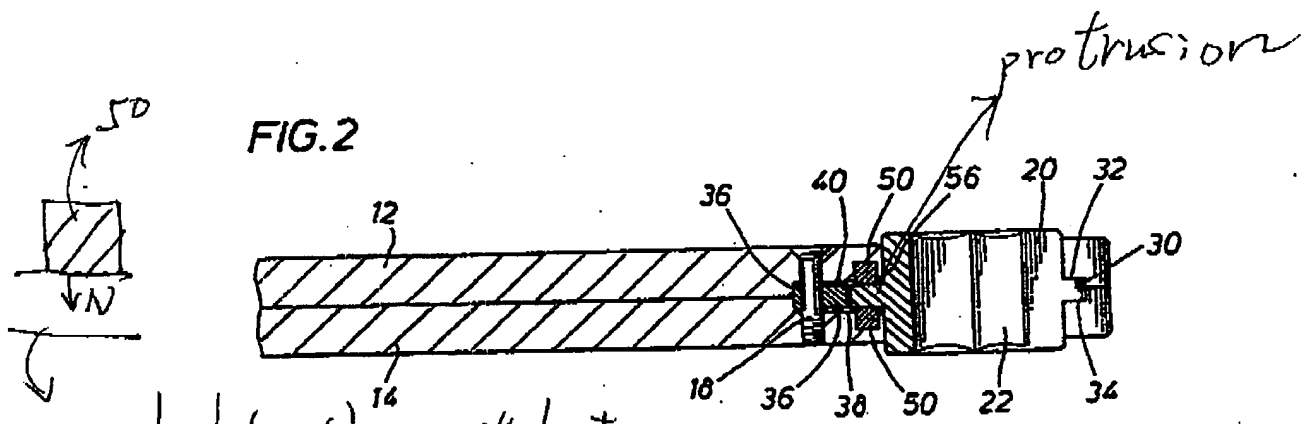
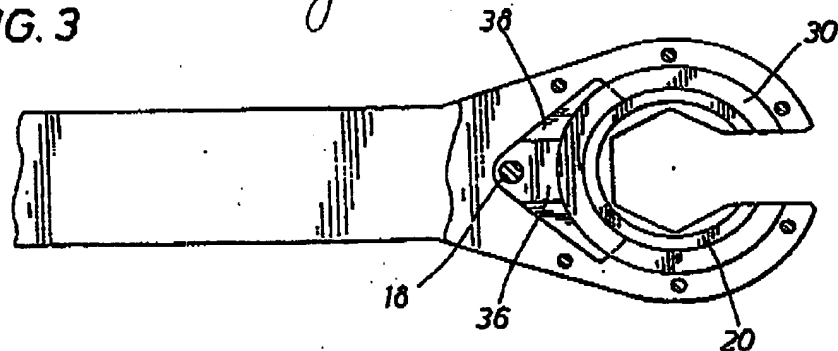


FIG. 2



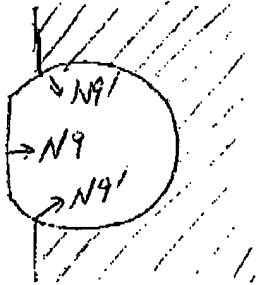
force applied to the ratchet
is not the rotation direction. The twisting force is
small, and thus the efficiency is low.

FIG. 3



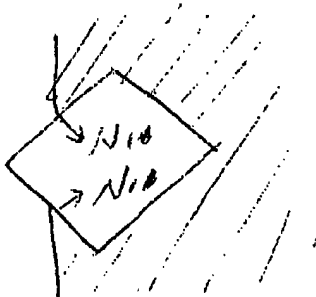
Drawings for Discussion the Novelty of the Present Invention.

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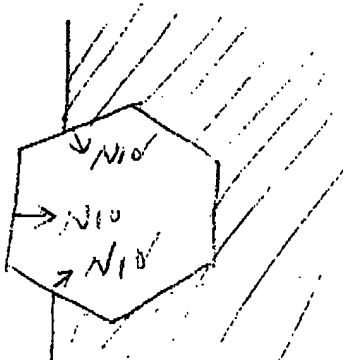
2a

$\begin{matrix} \nearrow N9'' \\ \rightarrow N9 \\ \searrow N9' \end{matrix} = \rightarrow N9 + N9' + N9''$
Part of the forces of $N9'$
are counteracted from
each other



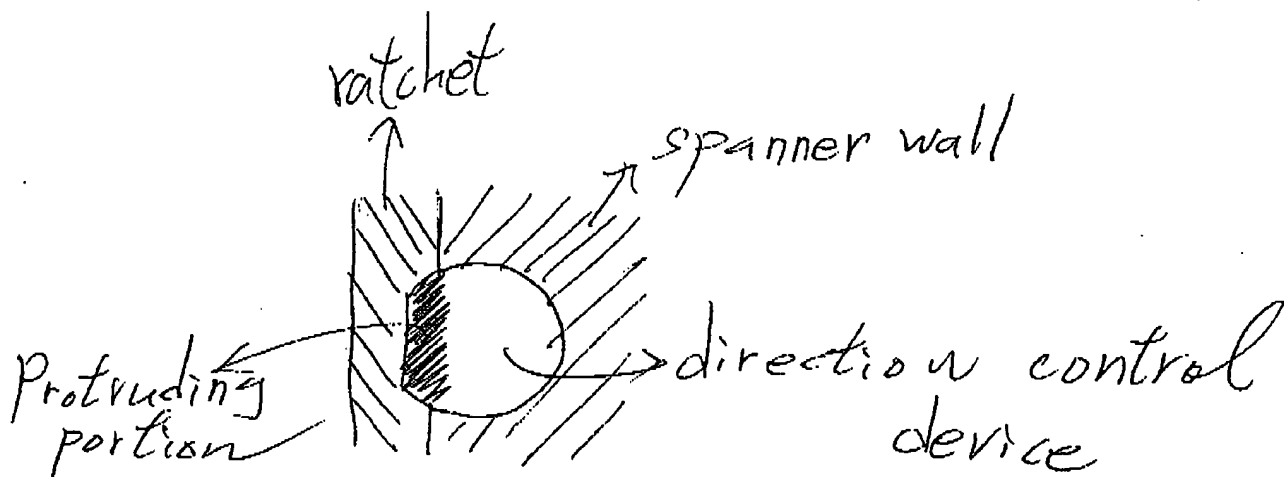
2b

No force normal to
the wall of the ratchet



2c

Drawing for Discussion 1 in the Response



The groove has an opening facing toward the ratchet, and part of the direction control unit protrudes from the groove.